The TECHNOCRAT

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The TECHNOCRAT

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WITH THE EDITORS

> "THE Power Age has arrived in North America, and within the next decade the Power Age will dominate this Continent from Panama to the North Pole. Power is the steamroller of technology. Technology is a jealous god. Technology will tolerate no false gods. . . . Technology is the social mechanics of the Power Age. The aspirations of human society on the North American Continent must be but the projection of the technological pattern of this Continent. The wish-fulfillment of the masses, the sincerity of the reformer, the enterprise of the politician, the vision of our intellectuals, the pathology of our economists, are but gestures of futility, straws in the wind, in the face of the march of power. . . . Technocracy salutes the march of power!"
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> —From TECHNOCRACY Magazine, A-9 issue, February, 1937.

LAST week nature 'blacked out' scores of war plants and other industries and about 125,000 homes in the Los Angeles area and we were given a visual demonstration of the fact that 'power is the steamroller of technology.'

The North American Continent is a 'Power Station!' The lives and welfare of its 175,000,000 citizens in its 48,000 communities are dependent upon an uninterrupted flow of power. If for any reason these vital flow lines are disrupted —by nature on the rampage, by mob violence, by sabotage, or any major debacle—the lives of these millions are in jeopardy. Homes are without lights, refrigeration or heat; transportation and communication facilities bog down; machines stand idle in the factories; warehouses and markets are glutted with unrefrigerated, perishable foods; cities are threatened by disease from non-functioning sewerage systems; water supplies are cut off; riots, looting, hysteria and panic result.

We are reminded of an editorial which appeared in the New York Times on January 17, 1936, following an incident in that city when the Hell Gate Power Station ceased to function. It reads in part:

"A short circuit and fire in the Hell Gate power plant cripples subway trains at the peak of the traffic and plunges New York into darkness from Sixtieth Street to the Harlem River for some six hours. Similar accidents occur at rare intervals in central stations all over the country. If New York has hitherto been spared annoying interruptions in electrical service it is because it has been lucky and not because its central station organizations are more efficient than those of other communities.

"The incident carries with it a striking social lesson, particularly in a week when technical societies are celebrating the two hundredth anniversary of James Watt's birth. During most of the nineteenth century energy was generated individualistically by thousands of engines that were the lineal descendants of the first mine pump that Watt designed with a separate condenser. Now energy is produced in central stations and shot hither and thither over vast regions. Moreover, energy can be pooled. The New York Edison Company draws upon the electrical resources of its own stations and those of the Niagara Hudson Company. It is the modern mass character of energy that is driven home by New York's mishap. A short circuit—and the organic life of a great city is slackened for a few hours. Back we drift to the eighteenth century, to burn candles and realize what we owe to the physicists and the engineers who have made energy collective and who transform the city into a blaze of light when the sun goes down.

"How utterly dependent we are on the engineers! They and the scientists hold us in the hollow of their hand. How many of them are there? A hundred thousand, a million— who knows? They constitute a new ruling class. Destroy them and the country would be laid low. Disease would decimate us, transportation would be impossible, telephone and telegraph would be silent, starvation would stalk in the cities, factories would stand idle. . . . When the lights go out we become aware of our rulers."

We take this means by which we live for granted. We are told that we enjoy greater comfort and security than other peoples because we have 'free' enterprise. But America has not been built by business or party politics. It was built by our technology. We are on the threshold of an age of super power based on the utilization of our hydroelectric energy resources in a Continental system of power generation and long-distance transmission.

The foundations of fascism are poverty, human toil and small-scale operation. The foundation of America is its integrated system of technology and power, backed by its heritage of resources—large-scale operation.

When we have mobilized our physical resources and when all North Americans are headed in the same direction we can serve notice on fascism—wherever we find it—that this Continent will not succumb to its degrading influence, but will go forward to meet its great destiny.

Technocracy salutes the march of power!

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ARTERIES of a NATION

Are Its Transportation Systems Which Carry Vital Supplies to Every Point

THE story of transportation in wartime is a contrast in great accomplishment and equally great efficiency. The lack of over-all planning and coordination is glaringly illustrated daily in the many bottlenecks and breakdowns of railroads, trucking, shipping and other means of transporting our war supplies, equipment, food and passengers.

What can be accomplished when the hobbles are removed and coordination and technology are applied has been shown in the building of the Alcan Highway to Alaska and in the transporting of war supplies to Russia across the Iranian desert. Both were considered miracles of accomplishment. Both were planned and executed by Army engineers.

The story of Alcan was one of steep mountain passes, glaciers, quagmires, swift streams, mosquitos and hard work. It was a project that should have been accomplished long before, but it took the urgency of a world war and imminent danger of an attack on Alaska to speed this vital supply artery to completion. Much remains to be done in that sector, but the initial step has been taken, and supplies are now moving by land that formerly had to go by the vulnerable sea route.

The job of pushing the Alaska highway through was given to Army engineers. They finished this great engineering feat in seven months—three months ahead of schedule—by using heavy-duty engineering equipment.

COORDINATED OPERATION

On the other side of the world, in Iran, another kind of transportation problem was engineered by the Army. This was the problem of getting Lend-Lease supplies across the desert to Russia. To achieve this, ancient fishing villages were converted into modern ports to receive the incoming cargo; airplane and truck assembly lines were set up; a unique but inadequate single track railroad was improved; and a trackless route across the desert was converted into a heavy-duty road.

On the airplane assembly line more than a thousand American workers toil day and night to maintain a steady flow of bombers and fighters for the Russian pilots to fly to the battlefront.

Trucks, which are now coming off the assembly line at the rate of one every ten minutes, are operated by Iranian drivers, who have been trained in well-organized schools run by Army officials.

Trucking experts have established a shuttle service so that the trucks roll day and night. A block system has been laid out along the 800-mile highway—each block ranging from 150 to 170 miles. At the end of each block there is a complete rest camp and maintenance crew. Each driver runs his block and then drops off for a meal and a few hours sleep before returning with a homeward-bound truck. The loaded truck, after a quick checkup, continues on its way with a fresh driver, so that supplies are rushed through as fast as possible to the Russian front.

This is a fine example of cooperation and coordination between ships, trucks and railroads, making the best use of equipment and manpower, with one consideration only—that of supplying goods **where** they are needed **when** they are needed.

In contrast to this efficient operation on foreign soil is the threatened breakdown here at home of both motor transport and railroad traffic. In the good old 'American Way' of locking the stable after the horse is gone, we are now beginning to realize how inadequately we have planned our transportation system so as to keep open the arteries through which flows the life blood of America.

Motor Transportation magazine for January 1944 gives us some facts and figures that show how grave the situation is becoming:

"Persons thoroughly familiar with all of the facts and fully qualified to speak authoritatively have made public statements in which they indicate the probable collapse of commercial highway transport during 1944. Should utter failure be staved off, there is no expectancy that serious impairment can be avoided, in the opinion of the savants.

AUTHORITIES WORRIED

" . . . The following expressions of opinion indicate the direction of the wind:

"Joseph B. Eastman, director, Office of Defense Transportation — 'We are approaching the most serious stage of the war in relation to domestic transportation. The next few months can definitely be designated as critical.'

"W. Y. Blanning, director, Bureau of Motor Carriers, Interstate Commerce Commission — 'The motor transportation industry can avert a total breakdown by the narrowest of margins.'

"Henry F. McCarthy, director, Division of Traffic Movement, O. D. T. —'It will take a miracle to overcome the tire, parts, vehicle and manpower stringencies which will face the trucking industry in the next six months.'

"Lt. Gen. Delos Emmons, commanding general of the Western Defense Command—'The Pacific Coast faces a major transportation crisis.'

"L. F. Orr, general traffic manager, Pet Milk Company, a large national shipper — 'There must be additional equipment made available as soon as possible, if we are to avoid a breakdown in highway transportation so severe that it will seriously affect our war effort.'

"Albert S. Goss, master of the National Grange, warns that drastic action will be necessary to prevent a 'serious breakdown' in essential wartime domestic transportation."

The writer then describes what this breakdown will mean:

"When contemplating what un-

Vital war material, as well as civilian food supplies, is hauled by motor transport. In order to handle such giant loads as this, the equipment must be kept in good condition—a difficult task now when parts and mechanics are scarce.—Photo courtesy of Fruehauf Trailer Co.

doubtedly will ensue should commercial motor transport fail in the eleven western states, two phases merit consideration. One relates to the movement by truck of supplies for the civilian population, the other to hauling for the armed forces. It is obvious that the military will be able to take care of itself. A bit inconvenienced, perhaps, but it will do all right. It is the welfare of the civilian population that appears to be acutely threatened and that does deserve consideration—very serious consideration.

"In the eleven western states are 7,572 communities that depend on highway transportation exclusively as they are not served by railways, airways, or waterways. This is 37.5 per cent of all of the communities. . . .

"In these communities reside one-tenth of the entire non-farm population of the states. Deterioration of commercial highway transport to any degree whatsoever will have a proportionate effect on the entire population of those communities. If it [should] collapse, those people's only recourse to enable them to obtain the necessities of life would be private, individual transportation—their own motor cars or light trucks. No estimate of the adequacy of these for the job can be advanced."

Especially not now with the gasoline situation as it is! To continue:

> **"Total collapse will be unnecessary—serious impairment will be sufficient to make almost the entire urban population of the states take in their belts. This includes those who dwell in communities served by forms of transportation that do not use the highways exclusively. And we are not considering retail truck deliveries, only over-the-road movements of commodities upon which the city and town dwellers depend. It is well to remember that there is no community, large or small, served by rails exclusively, but there are thousands served by trucks only.**
>
> **"Should highway transport in our states collapse this year, shortages in vehicles, manpower, equipment and supplies will be contributing factors and each highly important. . . . The trucks that were kept rolling in 1943 quite likely will not continue to roll throughout 1944."**

In its report on transportation, the Senate special committee investigating the national defense program stated:

> **"Just as in the case of railroads, there has been a tendency to think that somehow our truck transportation industry will be able to get along with little or no new equipment, and that the facilities for making such new equipment can be diverted indefinitely to the manufacture of war equipment. In the case of trucks, this tendency has been even more pronounced than that in the case of railroads. . . . As the result of this and the tremendous military demand for trucks during 1942 and 1943, the United States, the greatest user of motor vehicles in the world and the most dependent upon them, has had practically no trucks manufactured for civilian use."**

Any way you look at the situation it appears that the worst transportation crisis of the war is just ahead. The double job of supplying the nation with consumer goods, and of transporting armed forces and equipment to both coasts must be accomplished somehow with old equipment already worn and weakened by the strain of two years of war.

Railroad train wrecks have been frequent in the last few months. This can be blamed on the overloading and overworking of equipment, the lack of sufficient maintenance men and the shortage of new equipment and parts.

Strikes of railroad workers, which threatened the steady flow of war supplies, were averted by temporary government control. Continuous service of railroads at peak load can only be achieved when Price System interference is eliminated, all workers put on the same basis as the armed forces and all industries run on a no-profit, full-capacity operation plan.

Passengers riding in buses, street cars, taxies, trains and private cars will have to double up even more this year than last. Anyone who has ridden on public conveyances lately will wonder how this can be done. Train passengers sit or stand in aisles and sleep on the floor in every car. They stand in line for hours to get a meal in the diner. Rationing of travel tickets has been discussed but the difficulties are numerous. Pleasure trips are discouraged but no way has yet been determined to draw the line between business and pleasure.

Interurban buses cannot carry all the passengers who want to ride. Street cars and local buses, when loaded to the roof, pass by street corners crowded with workers and shoppers waiting for possible standing room on one or the other. Last September the buses and trolleys were hauling 60 million passengers a day, an increase of 75% over peacetime normal. Each day the figure climbs as private automobiles wear out and gasoline stocks get lower.

The gasoline situation threatens to become even more critical. The West Coast may have to cut 'A' card allowances drastically and check more closely on the use of supplementary gasoline. Many west coast gas stations are out of gas, and storage stocks are getting low.

The major part of our transportation facilities is powered by petroleum products. The waste and misuse of these means an inadequate supply for necessary purposes. We have sent shiploads of oil to Spain until recently. We have been manufacturing synthetic rubber from butadiene, a petroleum product, although the rubber made from alcohol is cheaper, and uses replaceable vegetable products as its source. We cannot go into all the difficulties of the oil situation now—for that is a long story—but it is closely related to the transportation problem. We cannot solve one without also regulating the other.

The condition of highways and the conflicting state laws concerning maximum weights and lengths of trucks and trailers are other barriers to efficient full-load operation of motor transport. Excessive fees are charged in some states for over-length or over-weight loads. Last summer when truck operators in Colorado refused to move over-weight truck loads under a new high schedule of fees, 90% of non-military truck traffic was halted for four days. During those few days about a million and a quarter pounds of freight piled up in Denver. What a prolonged strike would do to truck traffic can be easily imagined.

Railroad interests are blamed by the truckers for these conflicting laws and heavy fees. There has long been friction between railroads and trucking companies. There has been no cooperation or heed to the public interest, except where railroads obtained control of truck transportation. We can expect very little coordinated effort as long as the profit motive interferes. Only under Total Conscription of all equipment, manpower and materiel can we have full-load operation of all transportation facilities.

On January 22 Business Week reported some of the troubles truck industries are having — troubles which concern all of us:

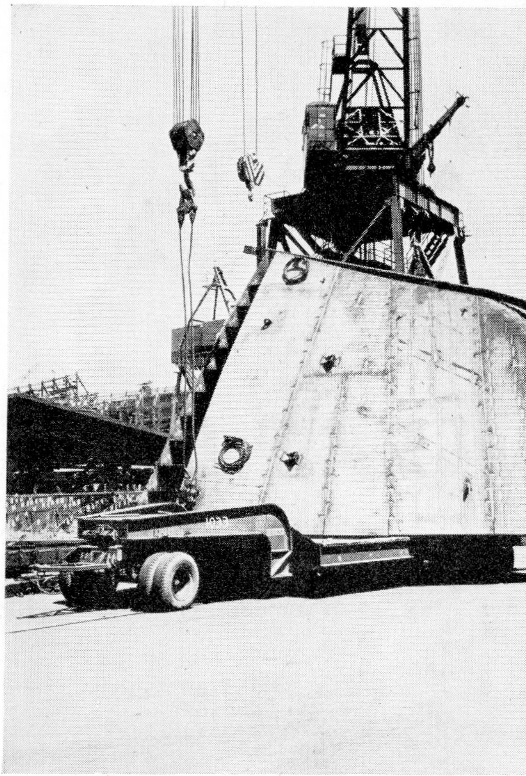
"Highway freight haulers claim their operations are cracking up because of inadequate replacement vehicles and parts. They are beseeching Washington for early relief, declaring that unless they have it the nation's highway freight web will soon break wide open, impairing delivery of war goods at basic sources.

"Through their associations, truckers are asking WPB to allocate to them at once a share of the productive facilities now assigned military vehicles. They argue that unless special allocations of this sort are made, trucks on the battlefields won't have war materiel from home to occupy them. . . .

"Case histories to bolster the claims are coming rapidly to light. A. C. Scott of Kirk Transportation Co., big Detroit hauler, declared last week that against 141 power units in service at the start of 1943, he had but 121 on Jan. 1, 1944, and 20 of these were laid up for repairs. . . .

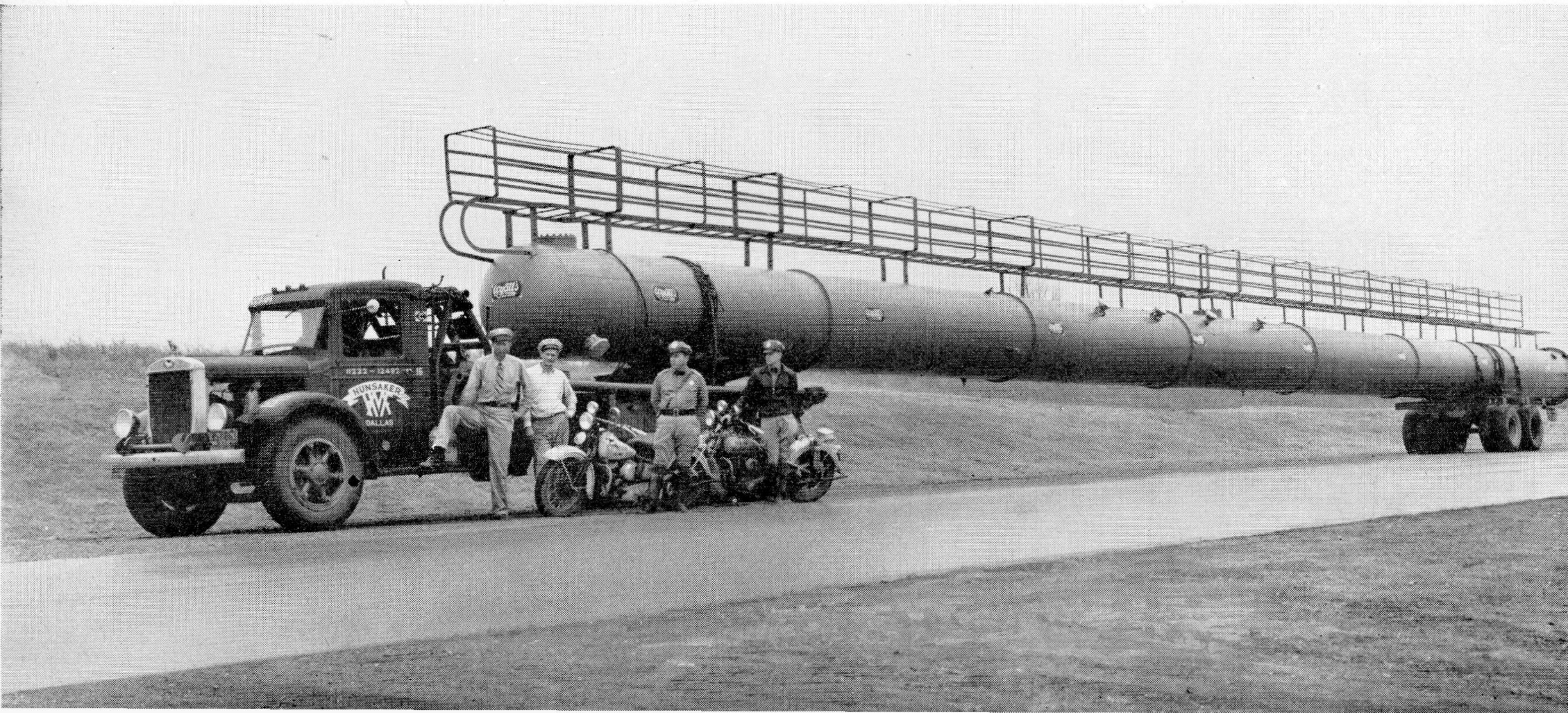
"C. J. Yokom of Petroleum Products Haulers, Detroit, reported that from a fourth to a third of his oil truck fleet is customarily in garage for repairs, against 12% to 15% a year ago. He said inability of oil truckers to meet deliveries has almost closed militarv and civilian airfields in the Midwest many times since fall.

"Don C. Smith, chairman of the Michigan Trucking Assn., estimated trucking efficiency at but 50% to 70%



RIGHT: Ships go by land in wartime in order to expedite war orders. Such unusual loads as this call for special planning and handling technique, but modern technology does the job efficiently.—Photo courtesy of Fruehauf Trailer Company.

BELOW: The longest load ever hauled in Texas, according to the Texas Highway Department, which furnished a police escort. The over-all length of the tower and truck was 135 feet. The tower alone was 80 feet long and weighed 80,000 pounds.—Photo courtesy of Hunsaker Motor Freight Lines, Inc.



of normal. Maintenance costs in 1943, he said, were higher for many Michigan companies than the actual value of the trucks repaired. . . .

"Maintenance is difficult, truck men agree, despite allocation of parts output at 150% of normal. Manpower and facilities problems interpose difficulties. Further, wrecks and strain on overworked vehicles are enlarging parts requirements."

Feeble steps toward the pooling of available equipment have been taken in a few places in order to eliminate duplicate runs. Last summer 33 highway freight haulers in the Chicago area combined in such a pool. This arrangement eliminates competition and permits the best use of machines and men. Each tractor is expected to work 24 hours a day, making two round trips between Chicago and peripheral points instead of one trip, as it did before.

The participating truckers report to a central dispatching office the loads they have booked to various destinations, and the central office then assigns the hauling to whichever carrier is most advantageously situated to handle it.

Such a step is only a preliminary to the coordinated transportation system which must be established in order to keep our wartime supply lines flowing steadily to the armed forces and civilian consumers.

The increasing shortage of cars and trucks for the home front is emphasizing daily our need for Total Conscription of these machines and the men to run them. Civilian truck and trailer manufacture was stopped July 1, 1942. This 20-month period has seen thousands of trucks retired, with none being manufactured to take their places.

Modern Industry of January 15, 1944, reports:

> **"The automobile industry is now producing war goods at a rate which is equivalent, in amount of work going into them, to a production of 16 million cars a year."**

Our industries are capable of great production, but what good will large war supplies do if stored in warehouses or depots, awaiting transportation?

We are threatened with a breakdown not only of transportation but also of our whole war effort and civilian economy, if Total Conscription of Men, Machines, Materiel and Money is not instituted soon. There is no other road to victory!

—Maxine Huntzinger.

THE THREAT of PEACE

Makes Last Ditch Defenders of Status Quo Apprehensive

AN American gentleman, returning home from a dinner party with his wife, was vigorously scolded by the lady for his alleged stupidity. "I was thoroughly disgusted with you all evening," she said. "You were the only man there who didn't have a postwar plan to explain!" Although this yarn appears in a current magazine on a page devoted to snappy bits of humor it is not quite as facetious as it seems.

Planning America's future, Europe's future, Asia's future, the future of the whole world has become the great national pastime—or disease—spreading from the halls of Congress to the city councils of our smallest crossroads towns in its political phase, and from the sacred directorate of the National Association of Manufacturers to the corner grocery store in the realm of business. Also every individual in the public eye who has a chance of catching the public's ear has America's future mapped out to his own complete satisfaction and is bursting with eagerness to impress the American people with the soundness of his analysis and the sureness of his conclusions.

Differing only in their details all of these plans are based on the same general premise and are pointed toward the same goal. The premise is that the economy of these United States can only be efficiently operated under the somewhat battered aegis of the so-called free enterprise system, and the conclusion therefore is that this system must be preserved in perpetuity lest this country fall to wrack and ruin and the people thereof vanish forever from the face of the earth.

But the premise is not a valid one, so neither is the conclusion. No method of operation of production and distribution can be called efficient that, with all the means at hand to produce and distribute in such quantity as to raise the standard of living of its people more than ten fold, does not proceed to do so. Yet the U. S. Treasury Department estimates from its income tax returns that we have in these United States, even now with our full employment rolls, 21 million families subsisting on less than $1000 gross income per year, and 24 million families whose earnings range only from $1000 to $2000 per year.

No social system is either equitable or efficient which permits huge war profits to accrue to many at home who only furnish the weapons for war, while the best of our youth are sacrificing everything in this most dreadful war the world has ever known. Yet statistics from the U. S. Department of Commerce, based on income tax returns, show that the profits for all business in these United States have increased more than 100%—after taxes—over the 1935-1939 average. In certain individual groups the gain was four times as much.

Furthermore, 70% of the war business has gone to only 100 large corporations, and so the bulk of the profits of war has fallen into the laps of a very small percentage of the population. For instance, the General Motors' take was $364 million in 1943 and the total for all business was over $8 billion in the same time. Under Secretary of War Patterson speaking before the House Ways and Mean Committee stated last November that if the war shall continue throughout the year 1944, government contractors will have accumulated in profits, after renegotiation and after taxes, the staggering sum of $42 billion—more than the entire cost of this country's participation in the first World War!

Furthermore, it is estimated that at the war's end there will be at least $100 billion worth of incomplete war material contracts. Reflecting the general anti-social attitude of the brass hats of this glorious system of so-called free enterprise, at a meeting of the Manufacturing and Industries Committee of the Chamber of Commerce in Los Angeles, a vice president of a powerful banking house discoursed at length on the uselessness of attempting to audit the payoffs to the contractors when their contracts should be cancelled. Just pay them whatever they ask appeared to be his proposal. Any other method would take too long!

HEALTH STANDARDS

We are considering now only a few of the 'peculiarities' of this so-called free enterprise system, so dear to the hearts of the few who benefit by it. But do you realize the implications of the recent figures on discharges from the Armed Forces? Behind closed doors of the House Appropriations Committee, Brigadier General Frank T. Hines recently announced these amazing figures. Up to September 30 of last year, nearly 1,000,000 men had already been discharged from the Army and Navy. Only 10,000, or 1%, were discharged because of disabilities received in battle. Most of them were disabled before they entered the service, passing the mental and physical tests by accident. Realize that these discharged men, plus the 24% of white men and 45% of negroes who have been rejected on reporting for military service, are all between the age of 18 and 38 years—the period of greatest physical strength in a man's life. Realize also that these discharged and rejected men form a very large percentage of our population and you will get some measure of the general low health standard of this, the wealthiest country in the world.

Tuberculosis was found to be one of the principal diseases rendering these men unfit for service. Tuberculosis is very often a result of malnutrition. Yet to maintain price and the system of free enterprise, millions of tons of food, which could have fed these men, were destroyed every year not so long ago. Millions of Americans cannot afford to buy the medical services they need, yet the so-called free enterprise system balks at every measure aimed to make such service available to them.

A SPECTRE AT THE FEAST

An indictment drawn against this laissez faire system of economic controls could never be completed. Its errors of omission and commission are as the sands of the sea—numberless. Despite the fact that it contains not the slightest element of a sound design for increasing the welfare of all of its 133 million citizens, but operates for the private gain of less than 3% of them, that 3% hopes and plans to keep that system staggering on through this war period and forever thereafter. But the eventual end of the war is the spectre at the feast.

The war saved the Price System temporarily, but the advent of peace will most probably sound its death knell. The die hard, last ditch defenders of the status quo realize that and the stock market reflects their fears of it. Whenever we have a few days of favorable news from abroad indicating an early victory, stocks go down; but when the news of Allied disasters reaches us, stocks bound back up again.

When the drums of war are finally stilled and the guns stop roaring there will be mass unemployment in this country on a scale never before known. The very necessities of war have speeded the application of more technology to production, increasing the capacity to produce, but decreasing the man-hours of work necessary, at a faster rate than ever before. For instance, a plant in Camden, New Jersey, has doubled its production with only 20% more workers. Phillip Johnson, president of Boeing Aircraft, recently stated that his company now produces a Fortress with approximately 1/3 the number of man-hours used in December 1941.

But the sacred system of free enterprise has no way of distributing the necessities of life to those not on its payrolls—except meagerly and stingily by private charity or public handouts.

We will probably have a federal debt of at least $300 billion—more than the total cost of operating the government since the days of George Washington. That debt can only be serviced and the integrity of the nation's financial structure preserved by taxes and plenty of them. But whence will come these taxes? Thirty million or more unemployed Americans will not be in a position to contribute. Yet a former President of these United States, now intensely occupied with postwar schemes—he of the unfulfilled promise of 2 chickens per pot, 2 cars per garage for every American—says that the whole corporation tax structure must be revised favorably to the corporations; that corporation gains taxes be repealed. Ease the tax on corporations, says Mr. Hoover, load them on the individual. But since a large percentage of American individuals will be unemployed the old story of the scarcity of water in a stone or of blood in a turnip applies very neatly here.

This dual problem of a high postwar national debt figure and a very low total employment figure is the one that most baffles the mighty minds of the financial wizards, industrial tycoons and political planners of the price and profit system of so-called free enterprise. Part of the time they are busy putting together various loose-jointed schemes aimed to meet these issues and still preserve the methods of economic control by which so few benefit but so many suffer. But much of the time, in an attempt to divert the thought of the American people from the urgent domestic crisis so rapidly approaching, they go international in a big way.

LESS SOCIAL SECURITY

Here we have the National Association of Manufacturers driving in the same seat with the J. P. Morgan Company and with the International Bankers and cartels, stressing the importance of a broad global outlook and an international strategy to be implemented by an international organization exerting the force of arms. In the meantime the NAM is busily en-

(CONTINUED ON PAGE 18)

Conserving With Plastics

Scientists Improve Methods of Utilizing Continent's Replaceable Resources as War Drains Pool of Raw Materials

IN this global war, so widespread in its implications, America was hard-pressed at the beginning to make up for the sudden stoppage of raw materials from foreign sources, the drying up of strategic domestic supplies and the neglect of our businessmen during pre-war years to build up sufficient stock-piles of vital materials while they still had the chance.

Through the resourcefulness and ingenuity of our scientists and engineers we are now well on the way toward making up for this lack in essential war materials by the development of new, synthetic substances which exhibit remarkable properties and in many ways are improvements over natural materials.

PLASTICS DEFINED

'Plastics' is such a relatively new term that the men working in the field are not yet in complete agreement as to its definition. The 1943 edition of 'Handbook of Plastics' offers this one:

> **". . . a synthetic organic material whose chief component is a resinous or cellulose derivative binder. At some stage in its production it is either plastic (capable of being shaped) or liquid (capable of being cast) and at some subsequent stage it assumes a more or less rigid condition. A plastic is either thermosetting (cures or sets under action of heat and cannot be remelted), or is thermoplastic (softens by reheating and can be remelted or remolded). The phenolics and ureas are examples of thermosetting materials; the acetates and vinyls are examples of thermoplastics."**

In his classes on Engineering Plastics given under the auspices of the University of California Extension Division, Dr. George H. Brother, senior chemist of the U. S. Department of Agriculture's Western Regional Laboratory, gives the following concise definition:

> **"Plastics are high polymer carbon compounds, products of polymerization or condensation reactions or modifications of such products, that may be formed to shape in 3 dimensions freely, and are permanently deformed if loaded above the yield point."**

The industry is very young—in fact the age of modern plastics may be said to start with the development by Dr. Leo Baekeland of a controlled phenol-formaldehyde condensation reaction in 1907. The trade-name 'Bakelite' stems from the commercialization of this first thermosetting plastic. Other scientists in earlier years conducted extensive experiments, but the results did not 'start the ball rolling' as did the advent of Bakelite.

Following the initial work of Dr. Baekeland a wide variety of new plastics and resins were developed, finding ever-increasing use in all types of consumer goods. Each new plastic overcame weaknesses in earlier materials, leading to the announcement late in 1942 of a new, transparent, thermosetting plastic CR-39, insoluble in common solvents and with an abrasion resistance 10 to 30 times greater than any other clear plastic. It maintains its shape at high temperatures and can be produced with low pressures. It is known chemically by the formidable name: DIALLYLETHYLENEGLYCOL-DICARBONATE.

Most outstanding development in plastics since the discovery of nitrocellulose in 1846 is the 'high polymer' theory. Much of the progress in evolving this theory is attributed to Dr. Wallace H. Carothers and Dr. H. Mark, who are considered by many to be the world's foremost experts on high polymers.

A few paragraphs cannot adequately cover the theory of high polymer chemistry for the writings of Dr. Mark and a score of other top-flight experts cover many volumes. A brief, generalized explanation seems to be in order and will at least make for a better appreciation of the great work of the scientists in the development of new, synthetic materials.

The chemistry of plastics is identified as the chemistry of carbon compounds. The 'building blocks' of these compounds are molecules. The molecule, a combination of two or more atoms, is the basic unit of the compound. A molecule which has the capacity of being able to link chemically with a like molecule or a different type of 'carbon' molecule without losing its chemical characteristics is called a monomer. When the monomers, nudged by heat and pressure, link into long chains we then have a polymer—the process of polymerization. During the process an attraction between the extended molecular chains develops. In thermoplastics the chains are held in a sort of bundle with mutual attraction between bundles, while in the thermosetting variety a direct bond or linkage exists between the chains to the extent that a huge lattice is formed. It could be said that in effect such an arrangement makes of a piece of thermoset plastic one huge molecule.

While all plastics are high polymers, the difference is in the degree of interbonding which affects the properties considerably. Plasticisers are materials mixed with the polymers to make the mixture more plastic by cross-linking with the polymers. It is deduced that from 300 to 500 monomers form the size of polymer most used in plastic materials.

It should be noted that the above is a very crude attempt to put the theory of the high polymer into everyday language. The reader is urged to investigate some of the outstanding publications in the field to gain a better picture of the importance of high polymer chemistry to plastics.

PLANNED IMPROVEMENT

High polymer chemistry has had far-reaching effects on plastics development. Neoprene and Nylon were made possible as a direct result of Dr. Carother's experiments. Allyl alcohol resins were developed by virtue of his pioneering work. Knowledge by chemists of the effect of the high polymer idea will result in new plastics developed with properties previously decided. In fact a well-ordered line of constant improvement has been followed for several years, as opposed to the haphazard approach in the early years of experimentation.

A FAST GROWING INDUSTRY

Because the plastics industry is relatively a newcomer on the American scene, comprehensive and accurate data on total production, personnel, amount of raw materials consumed, etc., are difficult to obtain. Many large corporations have taken on plastics as a sideline to their widespread manufacturing activities. Although the industry in the last decade and a half developed at a rate more than double the growth of the steel industry during a comparable period in its early history, these manufacturers continue to maintain their identity with original operations. Thus the situation of the plastics industry in itself is not clear.

According to Britannica 'Book of the Year' covering events of 1942, estimates based solely on U. S. figures indicated a 1942 world production of plastics and plastic resins of one billion pounds. The Year Book goes on to show 500 million pounds as 1941 U. S. production, based on 'reasonably accurate figures.'

More conservatively the Handbook of Plastics estimates total plastics production in the U. S. in 1941 as approximately 350 million pounds, not including 'borderline' products, fibers and fabrics. Thus it is evident that sufficient information is not yet available to accurately define the extent of the industry.

One fine illustration of the phenomenal growth of the field is to be found in government statistics which indicate a production of around 30,000 tons of cellulose acetate for 1942 as compared with a 1941 output of around 18,500 tons.

Although we have pointed out that the plastics industry is not yet completely established in its own right, there are some definitely characteristic factors that rank plastics on a level of importance with metals, fuels, food, transportation and textiles as vital components in our American industrial mechanism.

The industry may be roughly grouped into four main divisions:

1. Processing raw materials into usable chemicals, fillers, etc.

2. Preparation of varnishes, resins and molding powders.

3. Production of shapes (rods, tubes, sheets).

4. Fabrication into finished forms: laminating, fabricating, molding.

Not properly a part of any single division but embracing the entire field we have designing, testing and research.

The plastics industry is like a wheel with spokes built around a 'hub' of molding powder and resin, which furnish the fabricators, molders and laminators (the spokes) with their ingredients which are processed into usable articles in their final form by the distributing manufacturer (the rim).

SHORTAGE OF MATERIAL

Like other industries plastics has felt the impact of war time priorities in critical materials. With more than 125 raw materials designated as strategic, manufacturers have been hard-pressed to get along. Principal shortages which developed early in our war were in phenolics, benzol for polystyrene, nitric acid for nitrocellulose, and cresol for plasticisers. It goes by way of illustration that while plastics relieved the nation to a great extent from a shortage of metals, etc., plastics eventually found itself in the same boat.

Lately the situation has taken a more critical turn. On January 6 the Christian Science Monitor carried the following dispatch:

> **"The War Production Board announced that expanded military needs for certain plastics will require additional control which will cut the amounts available for civilian goods.**
>
> **"Stricter controls will be applied to cellulose acetates, acetate butyrate, polystyrene, phenolic and urea formaldehyde plastics, the WPB said. Allocations for these types of plastic will be largely restricted to vital uses, the production agency reported."**

The hundreds of jobs that plastics have been called upon to do in our war effort inspire the imaginative individual. So many new items have been produced that to list them all would require many pages.

The 'man in the street' has seen the most widely advertised trade-names used so often that he quite naturally thinks of plastic compounds by their commercial nomenclature rather than by the standard chemical or scientific terminology. For example: most people are familiar with such products as Lucite, Crystalite, Plexiglas, Enameloid, Gemglo, Textolite. But not many are aware that these names are used in the marketing of Poly-Methyl Methacrylate. Also some individual trade-names are used to merchandise products from a wide variety of plastic compounds, i.e.: Bakelite, Hemcoware, Plastiktrim, Textolite and Vinylite.

A MULTITUDE OF USES

Methyl Methacrylate Resin, produced under the trade-name of Lucite, is used to fabricate bomber noses, airport signal light lenses, antenna housings, gas mask lenses, navigation instrument parts, optically ground lenses, sighting apertures for planes and tanks, reflectors for military vehicles, water-tight containers and domes for life preservers and rafts, automatic feeder and lubricator parts.

Cellulose-Acetate plastics do important jobs also. Under the name of Plastecele many items have been supplied for miltary purposes, such as: Ammunition boxes, binocular parts, goggles for tank drivers, gun-sight lenses, motorcycle handles and windshields, protective covering for maps, charts, etc., rifle trigger guards, electric cartridge flotation valves, army bugles.

The Cellulose-Nitrates (Pyralin) are used for fabricating aircraft mileage indicators, auxiliary primers for munitions, containers used in soldiers' kits, map containers, navigation guides, photograph holders for military bases, range finder parts, vaccination shields.

Other versatile plastics and resins find their way into such uses as: waterproof impregnating solutions, plywood adhesives, laminated safety glass, fuel tank linings, solvent resistant tubing, rubber substitutes, bayonet handles, slide handles on machine guns, molded pistol grips, airplane pilots' seats, color control knobs for military aircraft, gasproof bags, Link bubble sextant, electrical and radio parts, airplane propellors, slide fasteners, films and coatings, lacquers, enamels, varnishes, and hundreds more.

Over 200 parts of the big bombers are made of plastics, chiefly phenol and formaldehyde. As the war progresses more uses will be discovered and more raw materials will be developed. Technocracy's proposed 'Flying Wing' super-bomber combines mass-production flow-line technique with extensive utilization of plastic components.

A very important phase in plastics is the research carried on by the Federal Government in efforts to utilize America's great natural resources, in addition to the research carried on in the laboratories of private business organizations.

The Forest Products Laboratory has conducted research with plastics for several years with the object of utilizing products of the forest. Developments of considerable importance that have issued as a result of this research include:

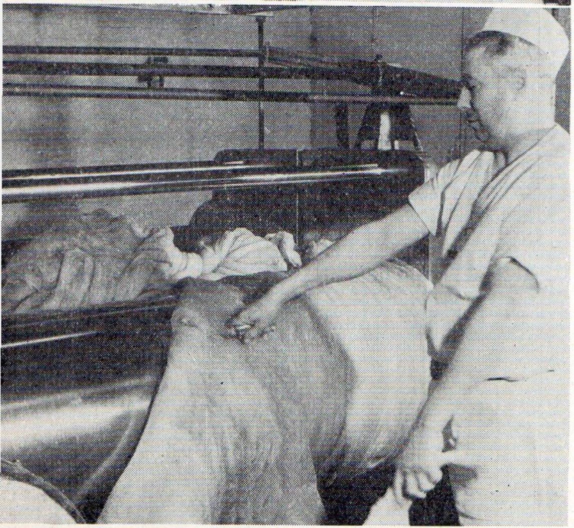
1. Waste wood—hydrolized by an acid, resulting in a useful filler for molding compounds. This method allows for effective handling of the proportion between cellulose and lignin. Thus the other physical properties are affected. With molding powders using the wood-waste filler it is possible to get by with as little as 25% phenolic resin as compared with regular phenolics with wood flour filler which require as much as 50% resin. It is estimated that a hydrolized wood-waste filled phenolic can be produced from between 3 to 5 cents a pound with a possible 50% saving in scarce phenol.

2. Forming synthetic resins within wood cells with a resin-forming solution of unpolymerized water-soluble phenol-formaldehyde which is introduced into the cells of the wood ve-

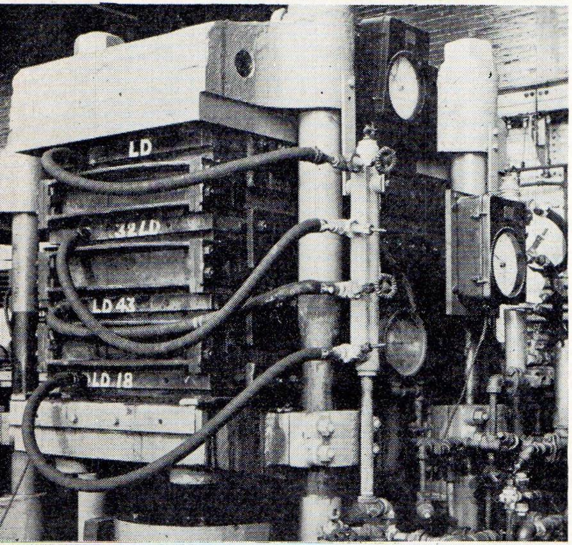
FRONT COVER:
The nose of this B-17F bomber built by Lockheed Aircraft Corporation is made of plastics. Already more than 200 parts for big bombers are made from plastics, and as the war progresses more uses will be discovered and more raw materials developed. The lightness and adaptability of these materials, in addition to the fact that they are made from replaceable resources, make them particularly suitable in the making of our most effective weapons of war.

—Erik Miller photo from Lockheed.

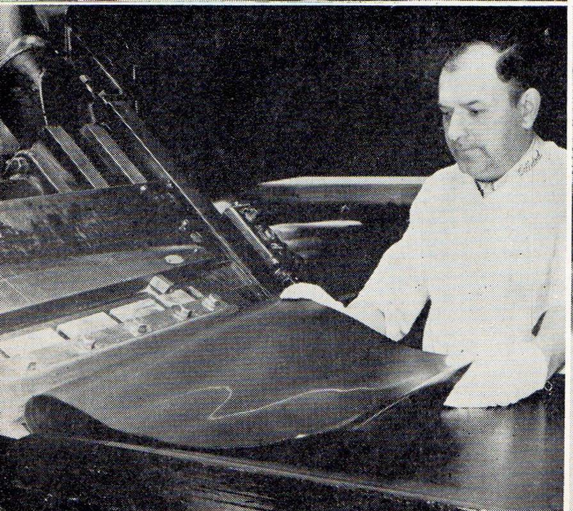
The pictures on this page show just a few of the steps involved in the making of 'Lumarith' plastic. Note the extensive use of automatic equipment—a saving in man-hours. First operation shown is kneading the cotton linters, acetic acid, and other materials into a doughlike mass.



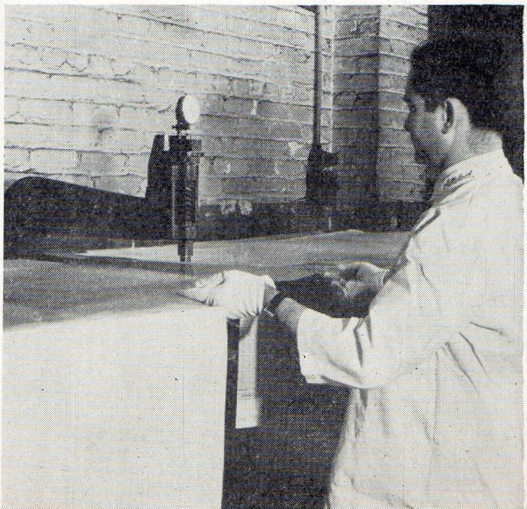
After removing the impurities from the mass of kneaded 'dough' by filtering it through a huge sieve, the plastic is rolled to disperse plasticizers and pigments evenly.



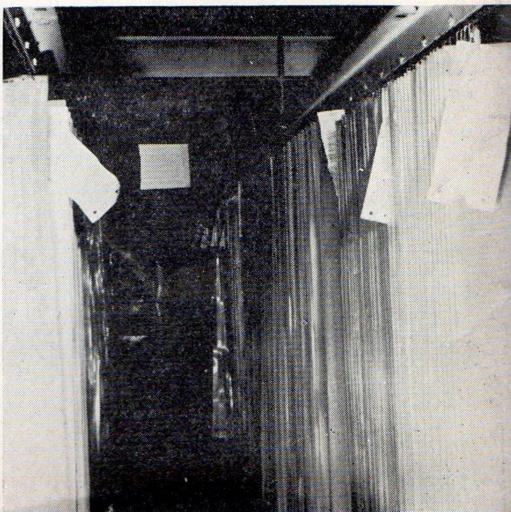
The next process is to form the plastic into rough cakes which are then placed in these machines to be pressed into slabs.



LOWER LEFT: These machines cut the pressed slabs into sheets of exact thicknesses.



Polished, mat or embossed finishes are applied with plates under pressure, and then delicate calipering instruments check the entire surface of the sheets for uniformity of thickness.



These finished sheets of 'Lumarith' plastic are hung in heated vaults for seasoning.

—Photos courtesy Celanes

neer, then placed under low pressure compression. This results in a product with superior properties to ordinary veneers.

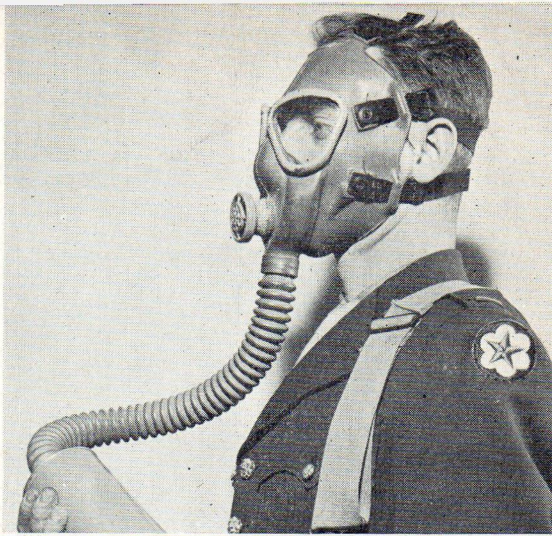
3. Paper plastic — a development which uses paper as a base. It has a smooth surface and can be formed in conventional plywood presses. Bullets pass through without splintering, leaving only a smooth hole. In tensile strength it is able to compare favorably with aluminum. It is a great improvement over ordinary paper plastic laminates.

4. Wood-urea combinations and special glues are under consideration.

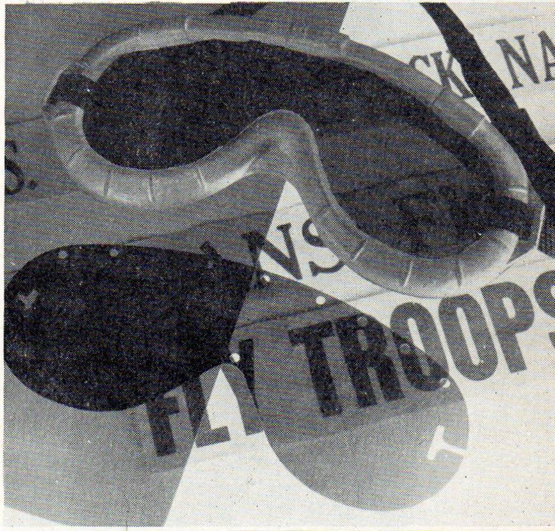
The Bureau of Agricultural Chemistry and Engineering of the Department of Agriculture, established in 1938, has directed its work generally to experimentation and studies in chemistry, engineering, physics and related branches of science with a view to finding new uses for agricultural products.

Extensive experiments have been conducted with soybean, lignin, casein and milk sugar at four well equipped Regional Research Laboratories which are located at Peoria, Illinois; New Orleans, Louisiana; Philadelphia, Pennsylvania; and Albany, California.

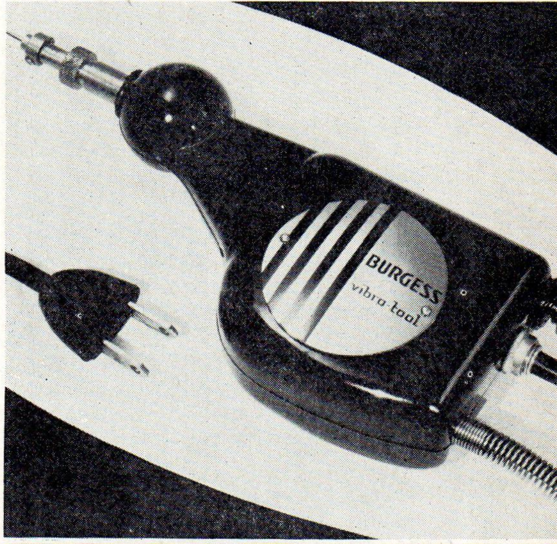
Two decades ago plastics development was treated more in the aspect of an art rather than partaking of the characteristics of designed scientific direction along engineering lines. Plastics were considered principally as decorative materials. As the cost of material was relatively high and waste was extreme only small objects could be turned out. It was then that the



This is the latest version of the angle tube on gas masks which allows an officer to give commands without exposing him to poison gas. Four discs of Lumarith allows faithful voice reproduction. Other parts of the mask are injection molded of plastic, including the optically perfect lenses.



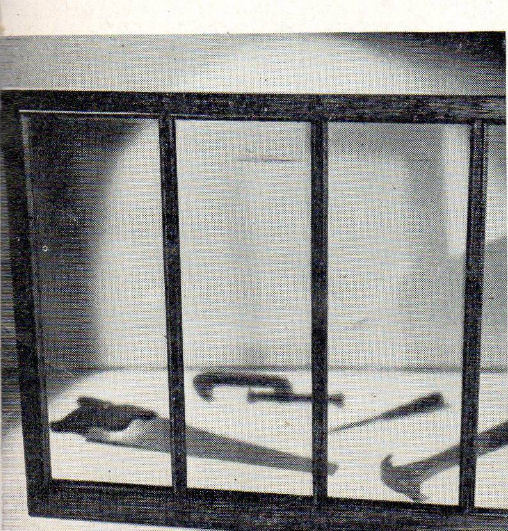
A new method of teaching and practicing blind flying in daylight has been developed which assures maximum safety. The equipment — green transparent plastic sheeting over the cockpit windows and a pair of red transparent plastic goggles. When the student puts on the goggles, he can see the instrument panel and everything within the plane—but he cannot see through the green sheeting at the windows because the effect is opaque and he merely sees black. The instructor, wearing no goggles, can see everything within the plane and can also see outside clearly through the green sheeting.



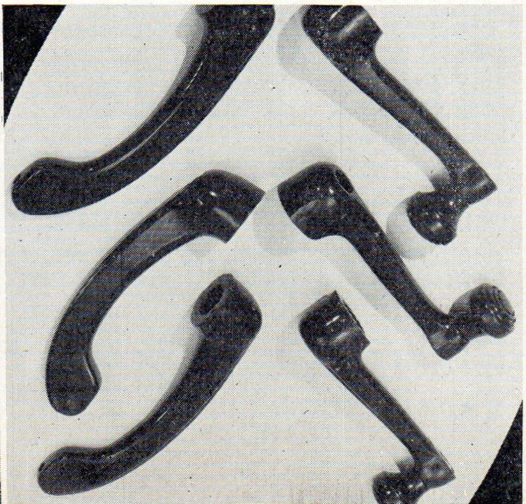
This tool with its molded plastic case is used for tapping out identification marks on tools, materials and parts in war plants. It has special attachments for filing, cutting, hammering and chiseling. It will run all day without overheating and uses only one-fourth the power of a 60-watt lamp.

LOWER RIGHT: Plastic moldings for walls, furniture, drapery rods, and other household uses are new. They are chip and corrosive proof, flexible and light in weight, and are easily cleaned.

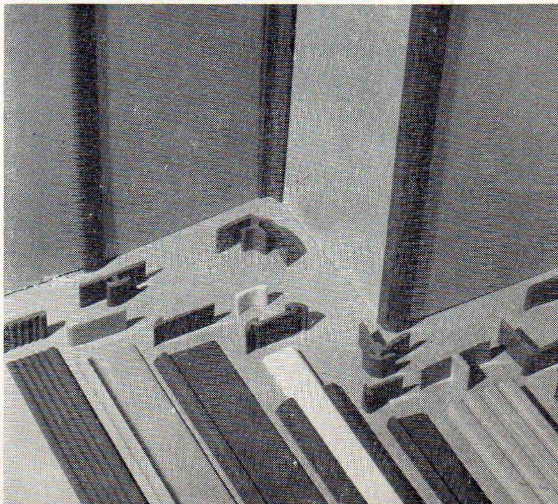
Celluloid Corporation.



Plastic-glazed wire in wooden frame is particularly adaptable for prefabricated troop shelters.



Plastic handles not only look handsome, but they are saving non-replaceable metals.



young industry was taken for quite a ride by the high-powered advertising profession.

A wave of sensation-type publicity and 'glamorizing' of the new test-tube creations rolled across the nation. A veritable gossamer fairyland was envisioned—it seemed everything would be made of plastics! Many of the claims for plastics were absurd and misleading to say the least. The engineers were viewing with skepticism the 'glamorous' aspects of the materials, and the half truths and misleading statements were not of a nature to inspire scientific confidence.

HOW NYLON IS MADE

For example: such half-statements as 'Nylon is made from coal, air and water', do not tell half the story of the intensive, detailed research work carried on since 1928 by Dr. Carothers and his associates. To elaborate: From coal, air and water, basic substances in nature, may be derived phenol (coal), nitrogen and oxygen (air), hydrogen (water). Then with the materials derived from the basic substances several groups or types of diamines, dibasic acids and amino acids are produced. (The raw materials are generally obtained in other ways.) These are reacted in various proportions under controlled conditions to form the group of polyamides designated by the generalized trade-name 'Nylon.' In the end process the nylon polymer is remelted, forced through spinnerets, wound on bobbins, from which the yarn is rewound to other bobbins during the stretching operation which orients the molecules and thus imparts qualities of toughness and elasticity.

The processes of producing nylons or any other plastic or plastic material are not as simple even as we have described it, but it is evident that John Q. Citizen thinks of the scientific work involved to the same degree that he gives second thought to 'what or why' when he presses the electric light switch. The fantasy the advertising profession has built up around scientific endeavors for many years hasn't helped much in educating the American people to a realization of what is available through science and engineering for them here in America—a Continent of potential abundance for all her citizens. The 'successful' businessman or industrialist is glorified, but the technician remains in the background, doing great things and accomplishing something substantial for the future.

The future of plastics, without exaggeration, holds much in store for the American people. Within a few years after the conclusion of the war—providing we have adopted a designed direction of our national operations so that all citizens may share in it—we may expect to see outstanding advances in plastics engineering and in the use of new and improved products. It may be difficult to convince a skeptical public of the future possibilities along these lines, but time will tell.

An analysis of the trends indicates extensive progress will be made in laminations and bonding. Laminates will be extremely useful in the 'House of Tomorrow'. Standardized panels can be fabricated readily by mass-production methods.

Special fittings, lighting fixtures and decorative effects could all be made from colored molded plastics as well as from laminations. Laminating lends itself very well to fabrication of automobile panels and components, machinery housing, etc.

Airplanes will continue to use plastics on an ever-increasing scale. The new helicopters will achieve lightness and adaptability toward mass-production by using plastic preforms and many new materials.

HOME GROWN RUBBER

Experimentation will continue in efforts to use more 'grown on the farm' by-products. Synthetic rubbers are here to stay, for they have been proven superior to natural rubber in many ways. We cannot expect to get rubber from the Netherlands Indies immediately after Japan is washed up. We may conceivably develop our own supply to the extent we no longer need this foreign resource.

We may expect to wear clothing woven from synthetic yarn or fibers as good, if not better, than the present nylons. Much of the equipment we see used everyday in our cities and on our farms will pass over more and more to plastics.

Food packaging techniques will develop, creating improved sanitary conditions and ease of transport. Piping for plumbing in homes, and even in industry, will be made of Saran (Polyvinylidene Chloride) or some other new material with properties as acceptable. Paints, varnishes, lacquers and protective coatings will come in for their share of improvements.

In some cases plastics will permanently replace metals for they have proven far superior. Window screen will be made of lifetime fibers.

Advanced technique in molding, with increased emphasis on automatic operation, will step up production considerably. This will not mean a corresponding increase in employment, in spite of the advertisements of manufacturers. The trend is still toward producing more goods with less human effort.

As for the future of Plastics, then, we have already pointed out that as the scientists in the field carry forward their work, each newly introduced material eliminates some technical weakness or inadequacy in previous stock. This trend will continue. Ultimately, as plastics become more and more established as the engineering materials they really are, the scientist and the engineer will draw closer in their partnership, working together to produce the things that will make possible a better America.

The accomplishment of these desired results, however, requires designed direction. As long as our economy is operated on a basis of individual and corporate profit, the progress of plastics—as well as all other industry—will be retarded. At present the processes developed by one firm are patented and held exclusively for the purpose of swelling the income of that particular firm.

The only method whereby these processes may be released fully to the service of the nation is by a total conscription of these processes, foreign and domestic, for the duration and for six months thereafter by the governments of the United States and Canada.

With the resources, the equipment and the processes made available to the trained personnel of our Continent, the scientists, the engineers and the technicians of plastics would be enabled to forge ahead to newer and better developments.

We salute this group working modestly in the background for they really KNOW HOW!

—Rae Columbus.

NO CEILING ON TAXES

John Q. Groans as Burden Becomes Heavier and Income is Sliced Thinner

SO YOU think you've been paying taxes? Well, 'you ain't seen nothing yet!' Were you relieved when the Administration's tax plan was cut from $10,500,000,000 to $2,275,000,000? Then read on, brother, and weep!

The treasury has announced that tax collections last year were $31,900,000,000—nearly double those of 1942. Individual income tax receipts, including $2,000,000,000 collected in six months of withhold-as-you-go, were up threefold, to $13,000,000,000. There were 28,300,000 U. S. taxpayers — seven times the 1940 total—including 10,300,000 who had never before paid income taxes.

Income taxes rose 152% from July to December of 1943 over those of 1942, and three major bills have increased taxation 700% since Pearl Harbor. We are already paying eight times more than in World War I, with a generalized average taxation of $357 per person. In Great Britain the taxation is only $291 per person; in Canada only $261.

What about this year? Business Week, January 29, explains:

"All in all, the final version of the 1943 tax bill will yield about $2,275,000,000 in additional revenue. Of this, $500,000,000 to $600,000,000 will come from direct taxes on individuals, $500,000,000 from corporations, and the balance from excises.

"This means that the total Federal revenues will add up to about $43,000,000,000 a year, excluding Social Security levies. Individuals will carry around $18,600,000,000 in direct taxes, corporations about $16,000,000,000. Excises will provide a little over $5,200,000,000. Customs and miscellaneous receipts will make up the balance . . . ."

Income tax **rates** have not increased, but elimination of credits for earned income and for federal excise taxes will cost taxpayers an additional $664,900,000. The normal tax on individual incomes remains at 6%. Surtaxes are unchanged, remaining at from 13% to 82%, but now the 13% surtax begins at the first level—$2,000 a year. This will result in higher taxes for the lower and middle-income groups. Victory tax has been cut from 5% with varying exemptions, to a flat 3% without exemptions on incomes over $624 a year. This is somewhat of a break for single persons who have been paying 3.75%, but remains the same for married persons without dependents and is an increase for married persons with dependents.

Individual income taxpayers in 1944 cannot deduct excise taxes paid on theater tickets, utility bills and safe deposit boxes, nor can they deduct use taxes paid on automobiles and boats. Exemptions for dependents rest on the condition prevailing on July 1. A marriage on or before July 1 allows a $1,200 exemption. A marriage any time after that date will allow only $500. Likewise the $350 credit for each dependent is granted only when the dependency dates from July 1 or prior.

These changes in income tax credits mean not only billions of dollars pouring into the United States Treasury, but they also mean plenty of dollars pouring out of your pocket.

And not only for income taxes—you will pay an excise tax of $9 a gallon instead of $6 for distilled spirits, and a tax of $8 instead of $7 a barrel for beer. The tax on your cabaret bill will cost you 30% instead of 5%, theater admission tax will cost you two cents on each ten instead of one cent. The annual tax on billiard tables has been increased from $10 to $20 a table, on bowling alleys from $10 to $20 an alley. A local letter will cost you three cents postage instead of two, and air mail eight cents instead of six cents an ounce.

Luggage, leather handbags and wallets will bear a retail tax of 20%, lightbulbs have increased from 5% to 20%, local telephone bills from 10% to 15%, domestic long-distance communications from 20% to 25%. Railroad, bus, airplane and water-transportation taxes have been increased from 10% to 15% with an additional 15% on seat or berth charges.

Milady's upkeep will be another big headache. The tax on furs has jumped from 10% to 20%, on toilet preparations from 10% to 20% and on jewelry from 10% to 20%.

Additional revenue from corporation taxes is set at $502,700,000. Excess-profits rate has been raised from 90% to 95% and credits reduced. The base specific exemption has been increased from $5,000 to $10,000. While non-profit groups such as labor unions and farm cooperatives are required to file financial statements, they are not required to pay income taxes. Religious, educational, charitable and fraternal organizations are not required to file statements.

Well, business has to pay its share of taxes, you say? Let's think that over. "The Economic Outlook," January, 1944, has something to say on this subject, as follows:

> "Corporate taxes on profits are supposed to be borne by corporation owners. That supposition is almost certainly false. Corporations simply anticipate what their taxes will be and add them to the prices they charge—pass them on to consumers. This is precisely what has happened since 1939. Corporate incomes have been increased faster than have taxes, with the ironic consequence that the government, which is the main consumer today, is paying the taxes which it has charged corporations with paying. . . .
>
> "The 90% excess profits tax is not really what it seems to be, for corporations will get a 10% refund after the war. If the war should end in 1944, this would amount to $2 billion, according to Treasury estimates.
>
> "Private investment in war plants has equalled about $5 billion. The Congress obligingly allowed a 20% annual amortization rate, making it possible for corporations to realize the full investment out of 5 years' profits on war orders of the government. The properties will have many years of life in them after that. Of the government's own $16 billion worth of plants, corporations have options to buy them, and may be favored with attractive bargains.
>
> "Beyond all this Congress has arranged that in the first two years after the war, corporations will be able to get refunds up to 60% on taxes paid during the war, if they sustain losses. By the end of 1943, this pool against which refunds could be claimed will probably reach $26 billion. We have practically guaranteed corporations two years of 'normal' profits after the war. Talk about social security!"

But business doesn't want to be

bothered with taxes. It would rather pass them directly to the consumer. Such outstanding institutions as the United States Chamber of Commerce and the National Association of Manufacturers have advocated a 10% retail sales tax plan—putting a 10% tax on everything the consumer buys! And this on top of already existing state sales taxes imposed in 23 of the 48 states.

These two institutions declare that a sales tax is deflationary and represents a new source of revenue, and that such a levy is necessary to spread a part of federal taxes to the public generally.

Representative A. Willis Robertson of Virginia is an ardent advocate of the 10% sales tax plan. He claims that "since a sales tax is regressive, by which we mean it tends to restrict consumption, it is a device that should be employed when there is an inflationary money gap of 30 or more billion dollars between purchasing power and available goods at present prices.

". . . Since the ways and means committee will not accept the Treasury plan the alternative to a sales tax is a further increase in the cost of living."

Robertson claims that since nobody in the lower income group starved in 1935 when the total national income was $55,000,000,000, there is no justification for saying that groups with an income of $55,000,000,000 can't contribute to war financing through a retail sales tax.

INCREASED LIVING COST

Evidently no one has told Representative Robertson that the cost of living in 1944 is somewhat higher than it was in the depression year of 1935. Hardest hit is the 'white collar' worker whose salary is frozen to pre-war levels. With no increase in income he must struggle in a sea of war taxes trying to keep his head above water. Peter Edson pointed this out in a column in the Daily News:

". . . Principal argument against a federal sales tax, coming from labor and consumer, is that it puts an unequal burden on the lower income groups.

"A family with an income of $2000 a year spends it all on the necessary expenditures of living and under a general sales tax proposal would pay 10 per cent of the entire amount in sales taxes, which would thus become an increased cost of living. A family with a $5000 or $10,000 income, however, might spend only $3000 or $4000 on retail purchases subject to sales tax and would therefore be taxed proportionately less.

"Going back to the $2000 income family, if a 10 per cent retail sales tax means a 10 per cent increase in the cost of living and wages must be increased accordingly, then it can be argued that the sales tax is inflationary. And in times like these, inflationary taxes are considered dangerous. . . ."

All taxes fall on individuals ultimately. The income tax is levied directly on persons; the corporation tax is levied indirectly through the sales price of goods and services. Since these are hidden taxes, it is apparent that corporation taxes are in reality a concealed type of sales tax falling on the buyers of all goods made and sold by corporations—they fall on the 'little guy,' the wage earner, the income taxpayer, the ultimate consumer—you and me.

Treasury Counsel Randolph Paul has warned that "while our tax system might safely, though not wisely, irritate 2,000,000 of our citizens (the number of income taxpayers in 1932), it will run serious risks if it irritates 20 times that number."

All in all, it is unfortunate for us that a presidential election campaign should fall at this time. Administration leaders and their foes have their eyes more on the ballot box than on the financial conditions of the majority of wage earners, and their ability to meet exorbitant taxes.

Opponents of the administration declare that such high taxes are not necessary. Senator Walter F. George, chairman of the Senate finance committee states:

> **" . . . [cutting back the tax bill] is a clear indication that Congress expects the Government to cut back extravagant and wasteful expenditures which the country has witnessed in the last two or three years.**
>
> **". . . It is time for the heads of agencies to stop assuming that, just because there is a war, they can call for all the money in the world. If they were economical, Congress would be more disposed to go further to meet more of the current war cost by taxation.**
>
> **"We have the highest taxes of any country since the birth of Christ.**
>
> **"We can save five to ten billion dollars a year by economy, certainly five billions. If we save five billions, it will be more of a check on inflation than paying it out and raising taxes."**

On February 22, President Roosevelt vetoed the new tax bill, which, he said, was filled with indefensible special privileges to favored groups. He stated that in that it cancels out automatic increases in social security taxes which would yield $1,100,000,000, and grants relief from existing taxes which would cost the Treasury at least $150,000,000 and possibly much more, it is not a tax bill but a tax relief bill providing relief not for the needy but for the greedy. He was critical of what he described as congressional failure to simplify federal tax laws and returns, and said the bill would "disappoint and fail the American taxpayers."

REPUBLICAN OPPOSITION

As for republican opposition to the Administration tax plan, the late Raymond Clapper stated in his column in the Los Angeles Daily News, Oct. 22:

"Republicans don't intend to be caught asleep on this. A political campaign is coming next year and the republicans are behaving so that nobody can accuse them of having anything to do with high taxes. . . .

"With the republican demand for economy, for curbing wastefulness in the government, there can be only the strongest support from anybody who sees his money being thrown around like water in some places in Washington. Everybody seems to be on the federal payroll. Some of the agencies are cluttered with people who are hard put to think up work for themselves. The arsenal of bureaucracy still is intact. . . .

"The republican demand for reduction of waste would carry more force if it were not so crudely used as an alibi for ducking the unpleasant duty of voting higher taxes.

"You can't hold the republicans alone to blame. They are following the lead of the National Association of Manufacturers which this week registered opposition to any tax increase. They are likewise afraid of the sales tax, following the lead of Phillip Murray of the CIO who threatened the house committee with a general wage increase demand from all labor if a sales tax is voted."

So, what have you? You have all parties playing hide and seek with the issue at stake, each hoping to be 'it' when the ballots are counted. The re-

(CONTINUED ON PAGE 18)

On the HOME FRONT

Twenty Years Too Late

"The Senate belatedly passed a bill today awarding the Congressional Medal of Honor to the late Brigadier General William L. Mitchell, pioneer advocate of air power. The bill now goes to the House.

"Sponsored by Senator Styles Bridges (Republican), New Hampshire, the bill says the President is authorized to award the medal posthumously in the name of Congress 'in recognition of his (Mitchell's) outstanding pioneer service and foresight in the field of American military aviation.' "

—Los Angeles Examiner, February 16, 1944.

'Back to the Hoe' Plans

"Washington planners are talking about 2,000,000 more farms after the war, reports Professor H. B. Walker, speaking to the Tractor and Implement Club, mostly small suburban-type farms, which will need small implements. They would not greatly increase commercial production, in his opinion, because our present 6,000,000 farms divide roughly into 2,000,000 that grow 85 per cent of our food, 2,000,000 growing 13 per cent, and the last 2,000,000 grow only 2 per cent. Thus an added 2,000,000 would grow about 2 per cent. Farms large enough to survive in hard times—about 4,000,000."

—Western Grower and Shipper, February, 1944.

Mr. Wallace Speaks

"Vice President Henry A. Wallace ended his Pacific Coast Tour tonight at a Seattle mass meeting in which he called upon the nation to guard against 'bloody revolution' by postwar planning and full utilization of national resources and labor.

"Wallace said a profound 'revolution' may come as an aftermath of the two World Wars and the past 150 years of modern technology and democratic thinking about the rights and duties of man.

" 'Those of us,' said Wallace, 'who realize the inevitability of revolution are anxious that it be bloodless and gradual, instead of bloody and sudden. We believe it can be bloodless and gradual if the makers of public opinion, if the politicians, if the pressure groups, will only influence their millions of followers on behalf of the public good instead of regional and class prejudices.

" '. . . We are not going to use the whole Russian political and economic system here in the United States. It was made for Russia and not for us, but Russia is doing every day what we in the United States have only preached on Sunday'."

—Los Angeles Examiner, February 10, 1944.

A Canadian Problem

"Challenge to the plea for stronger Empire ties after the war came from three powerful elements in Canada: French-Canadian isolationists of Quebec who oppose Canadian participation in the war; anti-imperialist socialists; and surviving advocates of collective security.

"Canada's growing desire for closer economic ties with the U. S. will determine Ottawa's ultimate stand on all Empire pacts."

—Business Week, February 12, 1944.

Business is Worried

"The longer the war in Europe lasts, the shorter will be the elapsed time between the fall of the Reich and the crushing of Japan. This telescoping of the time between the two armistices means simply that the ultimate reconversion is likely to be sudden, severe, painful.

"Earlier calculations have allowed for Germany's defeat sometime this summer; Japan presumably was to take a year more, perhaps longer. Between the time when Germany's fall became a certainty and Tokyo was knocked out, there would be the opportunity for careful, well-regulated demobilization of industry.

"The slower things go in Europe and the faster they go in the Pacific, the less smooth will be reconversion. Unless the advance planning is excellent, shutdowns and widespread unemployment might conceivably cause a severe wrench to the postwar economy."

—Business Week, February 12, 1944.

A White Elephant?

"Members of three separate Congressional committees have demanded a full-fledged investigation of why the War Department's huge Pentagon Building cost $75,000,000 instead of the $35,000,000 originally appropriated. Washington buzzed with reports of a scandalous waste of public funds and Rep. John D. Dingell, Michigan Democrat, called the building 'Somervell's Folly.' "

—The Progressive, February 14, 1944.

Waste Makes Waste!

"Brazil, producer of 75 per cent of the world's coffee, in order to regulate prices, burns some $20,000,000 worth of surplus stock annually. Coffee will not burn naturally, so kerosene is imported at a cost of $1,000,000 annually to keep it afire, and the odor of this burning coffee can be detected 100 miles at sea."

—Los Angeles Daily News, February 22, 1944.

What *Are* They Planning?

"The George committee and Bernard M. Baruch's postwar unit in the Office of War Mobilization are setting the pace for the government's thinking on postwar problems.

"By confining themselves to the problems of the transition period, they have ruled out other, more ambitious types of planning — the full-employment approach and the over-all national income approach—at least for the time being."

—Business Week, February 12, 1944.

OPERATIONS

News of the Organization

Los Angeles Area Reports

MSU Activities

According to the Dispatcher of the Sound Fleet of the Los Angeles Area, the month of February brought a large number of requests for the use of Technocracy's Mobile Sound Units as well as for the AC equipment operated by members of the Gray Fleet Operations Staff.

Behind the scenes, assuring maximum efficiency of service of the units, are the sound and radio technicians, members of the Staff, who spend many hours weekly repairing and improving the equipment.

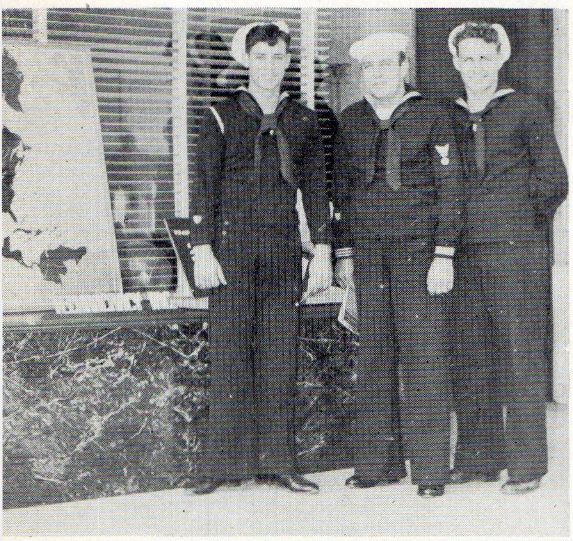
Downtown Section News

Section 1, R.D. 11834, Los Angeles, has recently enlarged its Headquarters by annexing an adjoining building for an auditorium.

Every night finds this centrally located 'Downtown' Section the scene of study classes, public lectures, committee meetings, membership dinners, dances or parties.

On the opposite page are pictures of the Headquarters and some of its activities.

The new auditorium (not shown in the 'Headquarters' picture,) is used for public lectures, membership meetings and dances. A smaller hall for study classes, several committee rooms, a kitchen, and the reception office furnish the necessary requirements for a functional Headquarters, to which the public is cordially invited at all times.

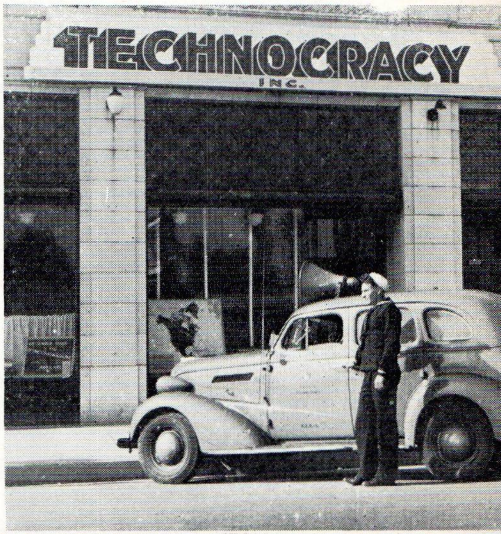


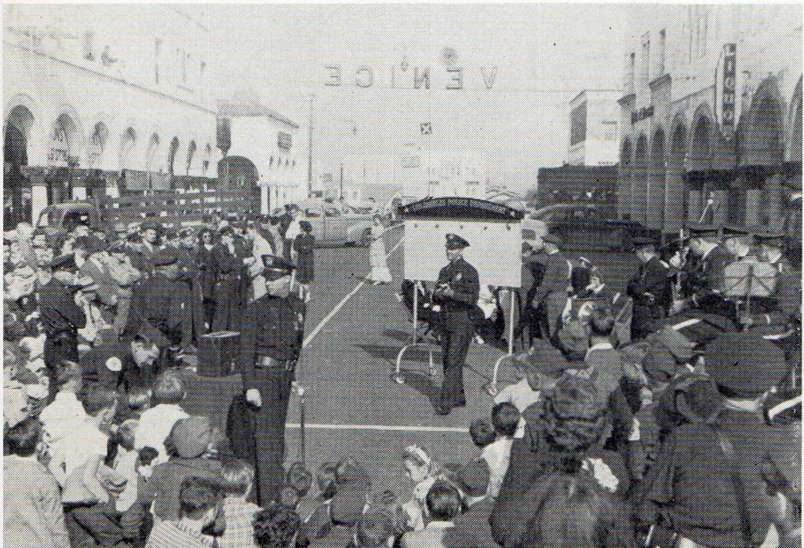
LEFT: Members of Technocracy now in the Armed Services avail themselves of every opportunity to visit a Section Headquarters. Technocracy Sections extend an invitation to all members of the Armed Services to make use of the Section libraries or to be guests of the Organization at any of its social events.

RIGHT: A member of a Spokane Section looks up friends among the Los Angeles Technocrats while on leave from the U. S. Navy.

LOWER LEFT: Los Angeles Police use Technocracy's Mobile Sound Units and AC equipment in Fourth War Bond drive at Venice, California.

LOWER RIGHT: Members of the Gray Fleet Operations Staff caught by the cameraman as they repair equipment for the MSU's.





ABOVE:
Headquarters of Section 1, R. D. 11834, located at a busy intersection in 'Downtown' Los Angeles, showing windows of study hall and reception office. Large auditorium is to the right of these buildings. A capable committee designs the window displays which attract the attention of hundreds of passers-by.

BELOW:
A study class in session. The Education Committee of each Technocracy Section is responsible for the educational program. In addition to the regular classes on the Study Course, current events are studied, particularly from the standpoint of trends making Total Conscription more urgent. Educational films also form a part of the varied and interesting program.

ABOVE:
This member of the staffing personnel of Section 1, greets visitors with a cheerful smile. Technocrats willingly give their time and services after hours in defense plants, offices or homes, making it possible for the office to be staffed from 10 a. m. to 10 p. m. daily.

CIRCLE:
Members enjoying an evening of dancing in the Headquarters.

BELOW:
Lectures by speakers authorized by Continental Headquarters are another feature in Technocracy's educational program. Speakers are not only available for lectures in the various Headquarters of the Organization, but take assignments to speak before labor unions, civic groups, service clubs, church groups and other organizations.

—Techphotos by DuRee.

NO CEILING ON TAXES

(CONTINUED FROM PAGE 14)

publicans are afraid of the National Association of Manufacturers, and of organized labor. The Administration is afraid of inflation, and you're afraid of going hungry.

Business Week, January 29, announced that:

> **"The Administration has just about abandoned the idea of using fiscal policy to keep inflationary income out of the hands of consumers, even though it hasn't given the theory formal burial. Its big hope now is that price and wage controls will hold out until major cutbacks in war production and the resumption of civilian output takes the strain off the price system."**

And, brother, it's a strain! The Price System, wobbling along on its last legs before Pearl Harbor, got a pair of crutches when rationing and price controls went into effect. But take the props out from under it and—watch out!

The new tax bill was passed over the President's veto in Congress on Friday, February 25. In spite of the fact that the President has declared the program **inadequate to meet present needs, it** is a heavy enough burden for the average wage-earner. And if you are one of those whose pre-war salary has been frozen, you're going to be one of the first to be strangled with taxes.

The nation has been warned that an **inadequate tax bill means inflation. If** this is so, and inflation does set in, you'll be starved out by high prices along with all salaried workers in war or civilian industries.

When the Senate on February 26 passed the tax bill by a 72 to 14 vote, it brought a vehement response from —of all people—a republican, Senator **Langer,** who condemned the Senate's action and lauded Roosevelt.

The Los Angeles Daily News, February 26, states:

"Langer, who had withheld his speech until after the vote on request of his colleagues, said he 'applauded the president's courage and straightforwardness.'

" 'This body richly deserved every bit of censure by the president,' he shouted. 'The senate has not done its duty . . . our tax laws are shameful . . . the rich are getting richer and richer out of this war and the profits higher and higher. More millionaires have been and will continue to be created out of this war than out of the World War—millionaires making money out of the blood and sorrow of our people.' "

All this is enough to leave any average American weak with apprehension, but the situation is not irreparable. Almost every American is willing to bear his share of the war burden, but the slightest research into the economic-politico set-up is enough to convince one that the average American in the low or middle income bracket is bearing the biggest part of the burden, and prospects are that his load will become increasingly heavy.

In spite of wishful thinking that 'free enterprise' can find a solution, financial experts are expressing fear that the Price System cannot stand the strain.

The remedy can not be found through taxation, nor by merely cutting administration costs, by conferences of big business, nor political compromise, but only through **equal** sharing of war responsibility.

This can be accomplished only by Total Conscription of all Men, Machines, Materiel and Money, with National Service from All and Profits to None. When all are in the service of their country, pulling together for victory, taxes and inflation will no longer threaten the economic security of the country nor of any American.

—Phyllis Lucas.

Paging Solomon!

"Mrs. Effie Wilhite said today she wished someone would get her out from 'between the devil and the deep blue sea.'

"Her troubles began last spring when the city [Denver, Colorado,] levied a $50 fine for operating a boarding house in a restricted zone. The city ordered her to close up the boarding house.

"But the OPA said 'no,'—she couldn't evict her tenants.

"Then last October she was fined $300 on the same charges, although she said she was completely willing to put out the boarders. The OPA said 'no' again.

"Now another city hearing has been set, but Mrs. Wilhite has little hope. Most of her tenants are defense workers or soldiers' wives who appeal to the OPA every time she asks them to move."

—Los Angeles Daily News, February 19, 1944.

THE THREAT of PEACE

(CONTINUED FROM PAGE 7)

gaged in polishing up such proposals as more sales taxes and less social security for Americans—two measures which, if passed, will greatly strengthen the financial position of big business at home. For decreasing the amount of public funds needed for social security will decrease the total amount of taxes necessary, and increase of the sales taxation method directly eases the strain of tax levies on corporations.

The big question, then, is not so much whether or not this system, so quaintly called 'free' enterprise by its beneficiaries, shall continue to control the destiny of this country, but whether or not it can continue. As to its ethical or moral right to sit at the controls there could be as many opinions as there are people considering the question. But as to its ability to continue in the face of the irreversible social trends in America, there can be only one answer which is based on facts, and all the facts in this case lead to only one conclusion: that in this country and on this Continent its days are numbered.

Technocracy proposed Total Conscription by the Government of these United States of the machines and men, the money and materiel of America in 1941. Had it been adopted **then** this war would have ended by this time with complete victory over fascism. This Victory Program if adopted **now** can still shorten the war, save billions of dollars' worth of American resources and hundreds of thousands of American lives.

But at the end of the war the issue between further attempts to operate this country's economy by the ruthless methods of uncoordinated, undisciplined interests or by a scientific integrated design of production and distribution will no longer be a subject for academic debates. The issue then will be the most urgent living reality America has ever faced. For the only choice that can then be made will be between the adoption of Technocracy's proposals or complete Continental social chaos.

—N. Jerome Bowen.

TECHNOCRACY

America's Only Social Dynamic

WHEN

Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that became known in 1920 as the Technical Alliance—a research organization. In 1930 the group was first known as Technocracy. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934 Howard Scott, Director-in-Chief, made his first Continental lecture tour which laid the foundations of the present nation-wide membership organization.

WHAT

Technocracy is the only American social movement with an American program which has become widespread in America. It has no affiliation with any other organization, group or association either in America or elsewhere.

It is not a commercial organization or a political party; it has no financial subsidy or endowments and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $6.00 which are paid by the member to his local Section.

WHERE

There are units and members of Technocracy in almost every State and in almost every province in Canada, and in addition there are members in Alaska, Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

Members of Technocracy are glad to travel many miles to discuss Technocracy's Victory Program with any interested people and Continental Headquarters will be pleased to inform anyone of the location of the nearest Technocracy unit.

WHO

Technocracy was built in America by Americans. It is composed of American citizens of all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this country. Membership is open only to American citizens. Aliens, Asiatics and politicians are not eligible.

Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife—as long as you are a patriotic American—you are welcome in Technocracy.

This Space for Section Stamp

The TECHNOCRAT

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Magazines

The Technocrat, 8113 So. Vermont Ave., Los Angeles 44, Calif., 15 cents; $1.50 for 12 issues; $1.00 for 8 issues.

Technocracy, 155 East 44th St., New York 17, N. Y., 15 cents; no subscriptions.

Great Lakes Technocrat, 306 W. Randolph St., Chicago 6, Ill., 25 cents; $2.50 for 12 issues; 6 issue trial subscription $1.25.

Northwest Technocrat, 813 Pine St., Seattle 1, Wash., 15 cents a copy; $1.50 for 12 issues.

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TOTAL CONSCRIPTION

HAS TECHNOCRACY A POSTWAR PLAN?

IT HAS not been necessary for Technocracy to promote a special 'postwar plan,' like the hundreds of plans from bureaus, agencies and business concerns.

Technocracy is a plan or design of operation for the North American Continent—prewar, during the war and postwar. War has not made it necessary for Technocracy to change its proposed design of social operations but has accelerated the conditions which will bring that design into operation.

Postwar planning in its popular use is the 'planning' of business to get more business, severally and collectively—to preserve the status quo.

During the war Technocracy is devoting its activities to the Victory Program of Total Conscription and invites the cooperation of all patriotic citizens.

MEN, MACHINES, MATERIEL AND MONEY

National Service from All and Profits to None!